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veyed his vast aggregation of facts in their purely objective relations, we are sure he also would have reached this conclusion.

D. G. BRINTON.

L' Origine de la Nation Française. By PROFESSOR GABRIEL DE MORTILLET. Paris, Felix Alcan. 1 vol. Pp. 336. With 18 maps and 158 illustrations. Price 6 francs.

In this work Professor Mortillet means to begin at the beginning, so that he passes as merely modern the classical writers and even the dispersion of the Aryans, commencing his history of the French people about 230,000 years ago, and not willingly admitting any fundamental alteration since in the racial type.

His volume is divided into several parts, the first embracing a review of what the Greek and Roman writers said about the area he is discussing. He recognizes the Ligurians as a distinct people, representing, probably, what might be called the autochthonous type. On the other hand, he believes that Gauls, Celts and Germans were a single and exotic type, one that at various remote as well as modern dates invaded the soil of France and made much noise in history, without profoundly affecting the primitive inhabitants.

His chapter on the languages is the least satisfactory of the book. He does not present accurately or even fairly the principles or the results of the best school of linguistic ethnology. His treatment of the Aryan question—one all-important in the prehistory of Europe—is quite inadequate, and is chiefly occupied with the opinions of authors now antiquated (Pictet, etc.).

A chapter on the ancient forms of writing and alphabets which have been discovered in France is abundantly illustrated and full of interest. His conclusion is that neither history, language nor etymology can solve the problem of the origin of the French peoples, so he turns toward prehistoric discoveries.

These occupy the latter half of his work. Here the author is thoroughly at home with his subject. He explains in clear and forcible language the doctrine of the development and transformation of organic forms up to the semi-human *Pithecanthropus*, and finally, to man, in the early Quaternary. This remote ancestor

is traced on the soil of France through his oldest 'Neanderthaloid' condition, when all his tools were of rough stone and his skin still hairy, down to a date when he was rudely assaulted by some people of higher culture arriving from the distant East, bringing with them more murderous weapons of polished stones and the far-killing bow and arrow. These were Neolithic tribes, brachycephali, from somewhere between Thibet and Asia Minor. They were followed in later days by another Asian invasion, from a remoter point of the Orient, who introduced bronze and the knowledge of tin.

From the commingling of these various streams on the soil of France, Professor de Mortillet would derive the present French nation, allowing, in addition, the known historic alliances. His principal point is, that from remotest antiquity, unerased by boreal glaciers or Roman swordsmen, by Semitic pirates or Allemanian war-lords, there has lived in the fertile valleys and on the green mountain sides of France the same 'patient, industrious democracy,' which, by its tenacious energy and unflagging labor has placed their nation as the leader in the van of modern civilization.

There is much in these theories of prehistoric migration in conflict with prevailing opinion in France itself—much that the author fails to support by convincing arguments. But apart from all questions of opinion, no reader can be disappointed in the remarkable amount of accurate information gathered in his pages and presented in a bright, pleasing style, which will render the volume attractive even to those who are but incidentally interested in the problems it undertakes to solve.

D. G. BRINTON.

UNIVERSITY OF PENNSYLVANIA.

SCIENTIFIC JOURNALS.

AMERICAN CHEMICAL JOURNAL, JUNE.

The Constituents of Pennsylvania, Ohio and Canadian Petroleum between 150° and 220°: By C. F. MABERY. The author refers to the conflicting statements published with regard to the composition of Pennsylvania petroleum based partly on the results of investigations on the Rus-

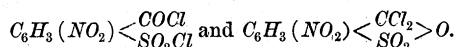
sian oil and partly on the results of Warren's and Pelonge's and Cahours' investigations of Pennsylvania petroleum. He shows that Pelonge's and Cahours' distillations were not carried far enough to obtain individual products and that, while Warren's separations were very thorough, his methods of purification were very crude and insufficient. In the work here described two principal objects were kept in view: the one to determine the series of hydrocarbons which form the main body of American petroleum, and the other to ascertain whether the composition of Pennsylvania, Ohio and Canadian oils, as regards their principal constituents, is the same. The author concludes from the results of a very thorough and exhaustive study that the constituents of Pennsylvania petroleum with boiling-points at 163° - 164° , 173° - 174° , 196° - 197° , and at 215° - 216° , are decanes and constitute the main body of the petroleum within these limits, and that whatever other bodies may be present are to be found only in small quantities. In order to obtain these products not only was prolonged distillation resorted to, but the products were treated with strong acids and sodium. In the Ohio petroleum the same products were obtained; but the amount of aromatic hydrocarbons is greater here than in the Pennsylvania oil. In the Canadian oil the products were the same as the others up to 173° . Products boiling at 196° and 214° were shown to belong to the series C_nH_{2n} and not, as the lower members do, to the series C_nH_{2n+2} . Although sulphuric acid is used on the large scale in refining oils, no definite information has ever been obtained as to its chemical action in these cases; but the author suggests some possible explanations. The author and Mr. E. J. Hudson have studied the refractive power of these products and find that the refractive power varies, as the specific gravity does, with the purity of the distillate.

On the Molecular Rearrangement of the Oximes by Means of Certain Metallic Salts: By W. T. COMSTOCK. The author has found that not only does phosphorus pentachloride, strong sulphuric acid and several other reagents effect the Beckmann rearrangement of an oxime into an amide, but that several metallic salts are capable of producing the same results. He has found

that cuprous chloride and bromide and antimony trichloride effect this reaction with the greatest ease. An intermediate cuprous chloride addition product is obtained in most cases, but this easily breaks down when the benzene solution is heated and forms the amide.

The Action of Urea and Primary Amines on Maleïc Anhydride: By F. L. DUNLAP and I. K. PHELPS. The authors have continued their experiments on a method described by them for obtaining imides by the action of urea on the anhydrides of dibasic acids. The intermediate addition product, which is an acid, was obtained in some cases, and attempts were made to prepare the imide of maleïc acid by this method. The intermediate product, maleïc acid, was easily obtained, but all attempts to obtain an imide in quantity sufficient for an examination failed. Several products were obtained by the action of primary amines on maleïc anhydride.

On the Isomeric Chlorides of p-Nitro-o-Sulphobenzoic Acid: By IRA REMSEN and G. W. GRAY. The formation of two chlorides of orthosulphobenzoic acid suggested, experiments with substituted acids to see if isomeric chlorides could be obtained from these also. The authors have obtained the two chlorides from the p-nitro substituted acid in well characterized form, and have studied the transformations which take place under the influence of various reagents. Both give the same product with water; but when treated with ammonia the symmetrical compound forms the ammonium salt of the corresponding sulphinide, while the unsymmetrical compound gives the ammonium salt of the corresponding cyansulphonic acid. The structure of the two chlorides is best represented by the following formula:



A number of salts of the sulphinide and sulphonic acid were made and studied, as well as the chloride and amide of the acid.

A Study of Ferric Hydroxide in Precipitation: By V. J. HALL. It is well known that many precipitates have the power to carry down other substances with them, and this is generally explained as an act of mechanical inclusion. Results obtained in a study of the action of potas-

sium hydroxide on aluminum sulphate have, however, led to the conclusion that the act is not entirely a mechanical one, but that it is a phenomena of strictly chemical nature. In the present paper the author has undertaken a study of the action in the case of iron hydroxide. While the results are not sufficient to definitely establish the nature of the action, they are inconsistent with the theory of mechanical inclusion and characteristic of chemical action. Reviews of the following books are also contained in this number of the journal:

'The Constants of Nature,' F. W. Clarke, Part V.; 'The Chemistry of Dairying,' N. Snyder; 'Inorganic Chemical Preparations,' F. H. Thorp; 'Traité Elementaire de Chimie,' Halper et Muller; 'The Principles and Practice of Agricultural Analysis,' H. W. Wiley, Vols. I., II. and III.; 'Vorlesungen über Bildung und Spaltung von Doppelsalzen,' J. H. Van't Hoff; 'An Outline of the Theory of Solutions and Its Results,' J. L. R. Morgan.

J. ELLIOTT GILPIN.

SOCIETIES AND ACADEMIES.

BIOLOGICAL SOCIETY OF WASHINGTON, 278TH MEETING, SATURDAY, MAY 22.

DR. ERWIN F. SMITH described 'A Bacterial Disease of Cruciferous Plants,' illustrating his remarks by means of drawings, diseased plants, and cultures of the organism on various media. The parasite is a yellow germ and is considered identical with that isolated by Professor L. H. Pammel from rotting turnips. Nearly all of Pammel's statements are confirmed, and much new information has been obtained concerning pathogenesis, symptomatology, host plants, manner of infection, thermal relations of the organism and its behavior in a variety of media. The organism was isolated from Maryland turnips and Wisconsin cabbages and a parallel series of cultures and experiments instituted. The following plants have been artificially infected: Cabbage, kale, cauliflower turnip, rape, black mustard, and radish. The dissemination of the disease is probably due in great measure to insects. It has been transmitted in the greenhouse from diseased to healthy plants by means of slugs (*Agriolimax*

agrestis) and also by means of the common cabbage worm (larvæ of *Plusia brassicæ*). The organisms show a marked preference for the vascular system of the plants, and a blackening of the veins of the leaves and of the vascular bundles of the stem is a prominent symptom. The vessels become crowded so full of the germs that they may be said to be plugged solid. The interior of the turnip rots, and the cabbage loses many leaves and fails to produce any head. The disease is widespread and well known to market gardeners. The organism is rod-shaped, motile, aerobic; it does not produce gas or acid; it liquefies gelatin; it grows rapidly at room temperature (20° to 26° C.), especially on potato. It grows feebly at blood heat, and will not grow in the thermostat at 40° C. The thermal death point is approximately 51° C. It produces a brown pigment when grown on slices of turnip, but not when cultivated on potato or in beef broth.

Dr. B. T. Galloway spoke on 'the Effects of Environment on Host and Parasite in certain Diseases of Plants.'

It was stated that plants in their growth and development are controlled by two sets of factors, namely, inherited disposition acting from within and external influences acting from without. Around these factors are centered many complicated phenomena, and the object of the paper was to call attention to some of these in their relation to certain physiological and pathological problems. The statements in the main refer to cultivated plants, for in dealing with them in questions, such as those under consideration, conclusions could not be drawn from the behavior of wild species, except in the most general way. In other words, one of the fundamental tenets of agricultural and horticultural practices is that the occurrence and behavior of native plants in any given region is not in itself sufficient evidence to prove that cultivated forms may be successfully grown there. Purely local conditions may make the difference between success and failure in growing the crop, and the effects of these conditions must be determined by observations and experiments on the plant itself.

The effects of environment on the host and the possible changes in the life processes as a